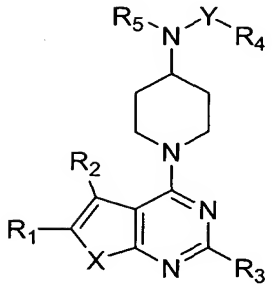
CLAIMS

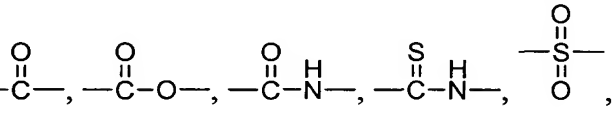
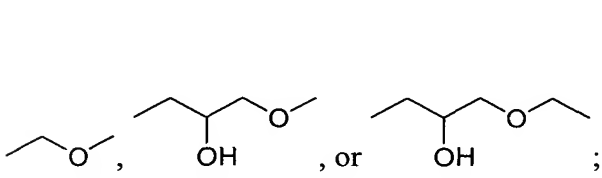
What is claimed is:

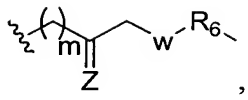
1. A compound having the formula

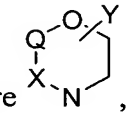


(I)

wherein

- X is S, O, C, NH, NR, or NCOR;
- R_1 and R_2 each independently are H; $(C_1\text{-}C_7)$alkyl; $(C_1\text{-}C_7)$cycloalkyl; $(CH_2)_n$-$(C_1\text{-}C_7)$cycloalkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl; or R_1 and R_2, when joined by a single or multiple bonds, can form an aliphatic or an aromatic ring;
- R_3 is H, $(C_1\text{-}C_4)$alkyl, $(C_1\text{-}C_6)$cycloalkyl, aryl, substituted aryl, heteroaryl or substituted heteroaryl;
- R_4 is H, $(C_1\text{-}C_5)$alkyl, $(C_1\text{-}C_6)$cycloalkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl; $(CH_2)_n$-aryl or $(CH_2)_n$-heteroaryl, where n is 1, 2 or 3;
- Y is CH_2, hydroxycyclohexyl,  ,  , with the proviso that when R_5 forms a heterocyclic ring with the nitrogen to which it is attached, Y is attached to the heterocylic ring;
- R_5 is H; $(C_1\text{-}C_5)$alkyl; $(C_1\text{-}C_6)$cycloalkyl, aryl, substituted aryl, heteroaryl or substituted heteroaryl; $(CH_2)_n$-aryl or $(CH_2)_n$-heteroaryl, where n is 1, 2 or 3;



, where m is 1, 2, 3, 4 or 5; or R_5, taken with the nitrogen to which it is attached, forms a five or six membered heterocyclic ring to which Y is attached, of the structure 

, where X is a methylene ($-CH_2-$) or carbonyl group ($-\overset{O}{\overset{\|}{C}}-$), and Q is a methylene group or not present;

- Z is H, H; O, H and OH, O-alkyl where alkyl is (C_1-C_6)alkyl, (C_1-C_6)cycloalkyl, O-alkylaryl, O-benzyl, O-CO-aryl, N-Me, N-acyl, N-aryl, N-aroyl, N-SO_2-alkyl, or N-SO_2-aryl;
- W is C, O, NH, NR; and
- R_6 is H; (C_1-C_5)alkyl; (C_1-C_6)cycloalkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl; $(CH_2)_n$-aryl or $(CH_2)_n$-heteroaryl; where n is 1, 2 or 3; and pharmaceutically acceptable salts and/or esters thereof.

2. The compound of claim 1, wherein said aryl group is selected from the group consisting of phenyl, naphthyl, and biphenyl.

3. The compound of claim 1, wherein said heteroaryl group is selected from the group consisting of thiazole, oxazole, benzothiazole, benzoxazole, pyrazole, indole, and indazole.

4. The compound of claim 1, wherein said substituted aryl group is selected from the group consisting of mono-, di-, or tri-substituted phenyl, naphthyl, or biphenyl with methyl, ethyl, propyl, allyl, n-butyl, n-pentyl, n-hexyl, methoxy, ethoxy, propoxy, butoxy, pentyloxy, hexyloxy, cyclopropoxy, cyclopentyloxy, phenoxy, benzyloxy, phenylethoxy, fluoro, chloro, bromo, iodo, amino, dimethylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy, tetrazolo, sulphonyl, thiomethyl, thioethyl, phenylthio, 2,3-methylenedioxy, and 3,4-methylenedioxy.

5. The compound of claim 1, wherein said substituted aryl group is selected from the group consisting of mono-, di-, or tri-substituted thiazole, oxazole, benzothiazole, benzoxazole, pyrazole, indole, and indazole.

6. The compound of claim 5, wherein said substituent is selected from the group consisting of methyl, ethyl, propyl, allyl, n-butyl, n-pentyl, n-hexyl, methoxy, ethoxy, propoxy, butoxy, pentyloxy, hexyloxy, cyclopropoxy, cyclopentyloxy, phenoxy, benzyloxy, phenylethoxy, fluoro, chloro, bromo, iodo, amino, dimethylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy, tetrazolo, sulphonyl, thiomethyl, thioethyl, phenylthio, 2,3-methylenedioxy, and 3,4-methylenedioxy.

7. The compound of claim 1, wherein X is sulfur.

8. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat a respiratory disorder.

9. The pharmaceutical composition of claim 8, wherein said respiratory disorder is asthma.

10. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat an inflammatory disorder.

11. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat inflammation.

12. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat inflammation in a mammal suffering therefrom.

13. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat a gastrointestinal disorder.

14. The pharmaceutical composition of claim 13, wherein said gastrointestinal disorder is selected from the group consisting of Crohn's disease; colitis; and irritable bowel syndrome.

15. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat an opthalmic disease.

16. The pharmaceutical composition of claim 15, wherein said opthalmic disease is selected from the group consisting of glaucoma; dry eye; conjunctivitis; and ocular hypotension.

17. A pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat a condition selected from the group consisting of neural injury; schizophrenia; stroke; psoriasis; an allergic condition; rhinitis and eczema; a CNS disorder; migraines; inflammatory pain; anxiety or depression; emesis; cancer chemotherapy-induced emesis; rheumatoid arthritis; tumor cell growth; and atherosclerosis.

18. A method of treating a respiratory disorder, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said respiratory disorder.

19. A method of treating an inflammatory disorder, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said inflammatory disorder.

20. A method of treating inflammation, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said inflammation.

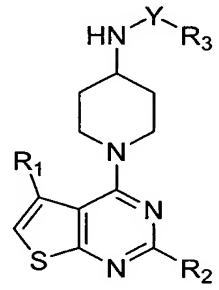
21. A method of treating a gastrointestinal disorder, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said gastrointestinal disorder.

22. A method of treating an opthalmic disease, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said opthalmic disease.

23. A method of treating an allergic condition, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said allergic condition.

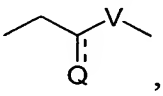
24. A method of treating a CNS disorder, comprising administering to a patient in need thereof a pharmaceutical composition comprising the compound of claim 1 in an amount effective to treat said CNS disorder.

25. A compound having the formula



(III)

wherein

- R_1 is selected from the group consisting of substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl;
- R_2 is H, $(C_1\text{-}C_5)$alkyl, $(C_1\text{-}C_6)$cycloalkyl, aryl, substituted aryl, heteroaryl, or substituted heteroaryl; $(CH_2)_n$-aryl or $(CH_2)_n$-heteroaryl, where n is 1, 2 or 3; and pharmaceutically acceptable salts and/or esters thereof.
- R_3 is selected from the group consisting of substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl; and
- Y is  , wherein Q or V is O, OH, S, or SH; and pharmaceutically acceptable salts and/or esters thereof.

26. The compound of claim 25, wherein said aryl group is selected from the group consisting of phenyl, naphthyl, and biphenyl.

27. The compound of claim 25, wherein said heteroaryl group is selected from the group consisting of thiazole, oxazole, benzothiazole, benzoxazole, pyrazole, indole, and indazole.

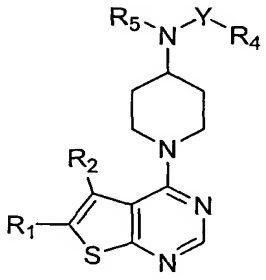
28. The compound of claim 25, wherein said substituted aryl group is selected from the group consisting of mono-, di-, or tri-substituted phenyl, naphthyl, or biphenyl with methyl, ethyl, propyl, allyl, n-butyl, n-pentyl, n-hexyl, methoxy, ethoxy, propoxy,

butoxy, pentyloxy, hexyloxy, cyclopropoxy, cyclopentyloxy, phenoxy, benzyloxy, phenylethoxy, fluoro, chloro, bromo, iodo, amino, dimethylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy, tetrazolo, sulphonyl, thiomethyl, thioethyl, phenylthio, 2,3-methylenedioxy, and 3,4-methylenedioxy.

29. The compound of claim 25, wherein said substituted aryl group is selected from the group consisting of mono-, di-, or tri-substituted thiazole, oxazole, benzothiazole, benzoxazole, pyrazole, indole, and indazole.

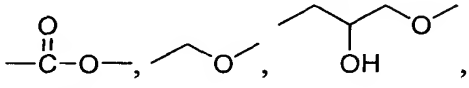
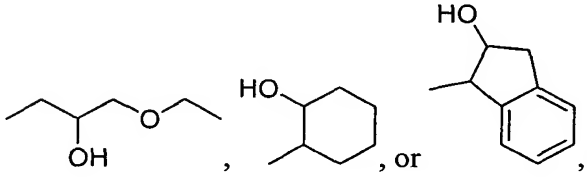
30. The compound of claim 30, wherein said substituent is selected from the group consisting of methyl, ethyl, propyl, allyl, n-butyl, n-pentyl, n-hexyl, methoxy, ethoxy, propoxy, butoxy, pentyloxy, hexyloxy, cyclopropoxy, cyclopentyloxy, phenoxy, benzyloxy, phenylethoxy, fluoro, chloro, bromo, iodo, amino, dimethylamino, nitro, cyano, trifluoromethyl, trifluoromethoxy, tetrazolo, sulphonyl, thiomethyl, thioethyl, phenylthio, 2,3-methylenedioxy, and 3,4-methylenedioxy.

31. A compound having the formula

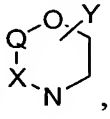


(II)

wherein

- R_1 is H or CH_3;
- R_2 is CH_3 or substituted or unsubstituted aryl;
- R_3 is H; (C_1-C_5)alkyl; or substituted or unsubstituted aryl;
- Y is CH_2, hydroxycyclohexyl,  ,  , or , with the proviso that when R_5

forms a heterocyclic ring with the nitrogen to which it is attached, Y is attached to the heterocylic ring;

- R_4 is substituted or unsubstituted aryl, *e.g.*, mono- , di- or trisubstituted with halo, trihalomethyl, hydroxyl, alkoxy (*e.g.*, methoxy), or with a dioxole ring; and pharmaceutically acceptable salts and/or esters thereof; and
- R_5 is H; $(C_1\text{-}C_5)$alkyl; $(C_1\text{-}C_6)$cycloalkyl, aryl, substituted aryl, heteroaryl or substituted heteroaryl; $(CH_2)_n$-aryl or $(CH_2)_n$-heteroaryl, where n is 1, 2 or 3; or R_5, taken with the nitrogen to which it is attached, forms a five or six membered heterocyclic ring to which Y is attached, of the structure  , where X is a methylene ($-CH_2-$) or carbonyl group ($-\overset{O}{\overset{\|}{C}}-$), and Q is a methylene group or not present; and pharmaceutically acceptable salts and/or esters thereof.

32. The compound of claim 31, wherein R_4 is mono- , di- or trisubstituted with halo, trihalomethyl, hydroxyl, alkoxy, or with a dioxole ring.

33. A compound selected from the group consisting of 1-(4-Methoxy-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 2-{1-[5-(4-Bromo-phenyl)-thieno[2,3-d]pyrimidin-4-yl]-piperidin-4-ylamino}-cyclohexanol; 2-[1-(5-p-Tolyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-cyclohexanol; 2-[1-(6-Methyl-5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-cyclohexanol; 1-(4-Chloro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; and pharmaceutically acceptable salts and/or esters thereof.

34. A compound selected from the group consisting of 1-Phenoxy-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-Benzyloxy-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(Benzo[1,3]dioxol-5-yloxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(Benzo[1,3]dioxol-5-ylmethoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(3,4-Difluoro-phenoxy)-3-[1-(5-

phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; and pharmaceutically acceptable salts and/or esters thereof.

35. A compound selected from the group consisting of 1-(2-Chloro-4-methoxy-phenoxy)-3-[4-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-cyclohexylamino]-propan-2-ol; 1-(3,4-Dimethoxy-phenoxy)-3-[4-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-cyclohexylamino]-propan-2-ol; 1-(3,4-Dichloro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(3-Chloro-4-fluoro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(2,4-Difluoro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; and pharmaceutically acceptable salts and/or esters thereof.

36. A compound selected from the group consisting of 1-(3,5-Difluoro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(3,5-Bis-trifluoromethyl-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(Benzo[1,3]dioxol-5-yloxy)-3-[1-(5-methyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-(Benzo[1,3]dioxol-5-yloxy)-3-(1-thieno[2,3-d]pyrimidin-4-yl-piperidin-4-ylamino)-propan-2-ol; 2-[1-(5-Phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-cyclohexanol; and pharmaceutically acceptable salts and/or esters thereof.

37. A compound selected from the group consisting of 2-[1-(6-Methyl-5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-cyclohexanol; 1-[1-(6-Methyl-5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-indan-2-ol; 5-Methoxy-2-{[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-methyl}-phenol; Bis-(2-fluoro-benzyl)-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-yl]-amine; 1-{1-[5-(4-Bromo-phenyl)-thieno[2,3-d]pyrimidin-4-yl]-piperidin-4-ylamino}-indan-2-ol; and pharmaceutically acceptable salts and/or esters thereof.

38. A compound selected from the group consisting of 1-[1-(5-p-Tolyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-indan-2-ol; 2-Fluoro-6-{[1-(6-methyl-5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-methyl}-phenol; 2-({1-[5-(4-Bromo-phenyl)-thieno[2,3-d]pyrimidin-4-yl]-piperidin-4-ylamino}-methyl)-6-fluoro-phenol; 2-

Fluoro-6-{[1-(5-p-tolyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-methyl}-phenol; 1-[1-(5-Phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-indan-2-ol; and pharmaceutically acceptable salts and/or esters thereof.

39. A compound selected from the group consisting of 1-(4-Fluoro-phenoxy)-3-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-propan-2-ol; 1-[1-(5-Phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-ylamino]-3-(4-trifluoromethoxy-phenoxy)-propan-2-ol; 1-(3,4-Difluoro-phenoxy)-3-{1-[5-(4-fluoro-phenyl)-thieno[2,3-d]pyrimidin-4-yl]-piperidin-4-ylamino}-propan-2-ol; [2-Hydroxy-3-(4-methoxy-phenoxy)-propyl]-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-yl]-ammonium; chloride; and pharmaceutically acceptable salts and/or esters thereof.

40. A compound selected from the group consisting of [3-(2-Chloro-4-methoxy-phenoxy)-2-hydroxy-propyl]-[4-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-cyclohexyl]-ammonium; chloride; [3-(3,4-Dimethoxy-phenoxy)-2-hydroxy-propyl]-[4-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-cyclohexyl]-ammonium; chloride; [3-(3,4-Dichloro-phenoxy)-2-hydroxy-propyl]-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-yl]-ammonium; chloride; [3-(2,4-Difluoro-phenoxy)-2-hydroxy-propyl]-[1-(5-phenyl-thieno[2,3-d]pyrimidin-4-yl)-piperidin-4-yl]-ammonium; chloride; and pharmaceutically acceptable salts and/or esters thereof.